

Drosophila melanogaster crosses for ABIO 350 Fundamental Genetics

Spring 2003

Cross 1 – Monohybrid cross

This cross will be used to test Mendel's Principle of Random Segregation. Carry the cross and reciprocal cross to the F₂ generation

Mutant phenotypes: vestigial **or** sepia

Potential monohybrid crosses (P₁): WT x vestigial **or** WT x sepia

Cross 2 – Dihybrid cross

This cross will be used to test Mendel's Principle of Independent Assortment. Carry the cross and reciprocal cross to the F₂ generation.

Mutant phenotypes: vestigial **and** sepia

Dihybrid cross (P₁): vestigial x sepia

Cross 3 – X-linkage cross

This cross will allow the analysis of inheritance involving loci on the X-chromosome. Carry the cross and reciprocal cross to the F₂ generation.

Mutant phenotype: white

X-linked cross (P₁): WT x white

Cross 4 – Linkage cross

This cross will allow the analysis of inheritance involving linked loci. After obtaining F₁ offspring, conduct a testcross by mating F₁ virgin females with P₁ mutant males. Do not conduct a reciprocal cross.

Mutant phenotype: sepia ebony

Linkage cross (P₁): WT x sepia ebony

Attention: In regards to the **Dihybrid cross**, WT x Sepia ebony cannot be used (refer to the dihybrid cross above). Note however, that with some modification this experiment can be used for the **Linkage cross** as follows:

1. maintain one of the P₁ cultures (remember no reciprocal cross is required) as normal;
2. when the F₁ progeny hatch out, obtain five virgin females and conduct a testcross using five sepia ebony males; and
3. complete the testcross and obtain pertinent data.